

### **REMARKS/ARGUMENTS**

The present amendment is in response to the Office Action mailed September 10, 2003, in which Claims 1 through 14 were rejected. Applicants have thoroughly reviewed the outstanding Office Action including the Examiner's remarks and the reference cited therein. The following remarks are believed to be fully responsive to the Office Action and, when coupled with the amendments made herein, are believed to render all claims at issue patentably distinguishable over the cited references.

Claims 1, 2, 3, 4, 5, 6, 7, 8, 9 and 14 are amended herein. Claims 11 and 12 are cancelled. New Claims 15 through 23 are added. Accordingly, Claims 1 through 10 and 13 through 23 are pending.

All the changes are made for clarification and are based on the application and drawings as originally filed. It is respectfully submitted that no new matter is added.

Applicants respectfully request reconsideration in light of the above amendments and the following remarks.

### **CLAIM REJECTIONS – 35 U.S.C. SECTION 101**

With respect to Page 2 of the Office Action, the Examiner rejected Claims 11 and 12 under 35 U.S.C. Section 101 as being directed to a use which is not a statutory category of invention.

Applicants have cancelled these claims herein thus rendering this rejection moot.

## **CLAIM REJECTIONS – 35 U.S.C. SECTION 112**

Further with respect to Pages 2 and 3 of the Office Action, the Examiner rejected Claims 2 through 10, 13 and 14 under 35 U.S.C. Section 112 as being indefinite.

Applicants respectfully traverse these rejections based on the following changes made for clarification.

Claim 2 has been amended to provide an antecedent basis for the platelet-shaped layered silicate.

Claim 3 has been amended to change dependency from Claim 1 to Claim 2, thus providing an antecedent basis.

Claim 4 has been amended to change dependency from Claim 1 to Claim 2 and to define the ground layered silicate as being produced from the grinding process, thus providing the needed antecedent basis.

Claim 5 has been amended to remove the word "preferably."

Claim 6 has been amended to change dependency from Claim 1 to Claim 5 and to strike the word "optionally."

Claim 7 has been amended to change dependency from Claim 1 to Claim 5, to provide an antecedent basis for "mean particle," and to delete "preferably from 2 to 8  $\mu\text{m}$ ."

Claim 8 has been amended to cancel the references to "and/or."

Claim 9 has been amended to delete the word "preferably" and its related text.

Claim 10 has been amended to delete the word "preferably" and its related text.

Claim 14 has been amended to cancel the reference to "and/or."

Reconsideration and withdrawal of the Examiner's rejections under 35 U.S.C. Section 112 are respectfully requested.

### **CLAIM REJECTIONS – 35 U.S.C. SECTION 103(a)**

With respect to Pages 3 through 5 of the Office Action, the Examiner rejected Claims 1 through 10, 13 and 14 under any one of U.S. Patent No. 4,467,077 to Meyer *et al.* (hereinafter referred to as "Meyer *et al.*"), U.S. H1955 to Middlesworth *et al.* (hereinafter referred to as "Middlesworth *et al.*"), U.S. Patent No. 6,214,917 to Linzmeier *et al.* (hereinafter referred to as "Linzmeier *et al.*"), and European Patent Application No. 669365 (hereinafter referred to as "EPA").

Applicants respectfully traverse these rejections.

#### **A. Amended Claim 1**

Initially Applicants note that independent Claim 1 has been amended to read as follows:

*Transparent, single- or multilayered, oriented polypropylene film comprising at least one layer, characterized in that said at least one layer comprises a layered silicate without a coating of metal oxides which has an irregular surface structure, wherein the amount of said layered silicate is between 0.01 to 4% by weight, based on the total weight of the film.*

Applicants note that no new matter has been added by these changes, as this amendment, made for clarification, is supported by claim 1 as originally filed and by the specification at, for example, page 3, lines 12 to 15. Specifically, the amendment

clarifies that the invention refers to a biaxially-oriented film made from polypropylene having a low content of a special mica.

## **B. The Cited Art**

### **1. Meyer *et al.***

Initially, and with respect to Meyer *et al.*, Applicants respectfully observe that this reference discloses a composition of polyolefin and mica. Such a composition can be used for producing films therefrom (Col. 4, lines 55 – 61). However, there is nothing else in Meyer *et al.* which deals with films as there is nothing in that reference – beyond this single sentence – which regards films. Specifically, there is certainly is no disclosure about oriented films. Moreover the compositions disclosed in Meyer *et al.* contain at least 10% by weight of mica (col. 1, lines 59 – 62: "1 part mica; 9 part polypropylene"). Such high concentration of mica will not result in a transparent film after orientation. In fact, such films will be very dull and non-transparent. Therefore Meyer *et al.* do not refer to transparent films and, in fact, teach away from the invention as now claimed. Accordingly, amended claim 1 is patentable distinguishable over Meyer *et al.* in that films of the present invention as claimed are oriented, are transparent and have a much lower amount of mica.

### **2. EPA**

The Examiner rejected claim 1 *et al.* as being obvious over the cited European Patent Application, or the EPA.

The EPA discloses laser markable compositions, which develop a vivid dark brown or black color where irradiated by a laser beam. The EPA further discloses various applications for such laser markable compositions, including films, and also oriented films (page 5, lines 29 to 39).

The EPA discloses amongst many other additives mica as a laser pigment. But there is no explicit disclosure as to the surface structure of such mica. An analysis of the Examples reveals that in fact the mica has a smooth *but not* an irregular surface. Example 1 discloses the process for producing the mica, which is used in the films. According to this example, a mica of about 8  $\mu\text{m}$  particle size is mixed with glass beads and alcohol and treated in a ceramic sand mill, in order to reduce the particular size to about 2  $\mu\text{m}$ :

"Referential Example 1

100 ml of glass beads (1 mm phi), 100 g of mica (Kuralite mica 600W produced by Kuraray Co., Ltd.; average particle size: 8  $\mu\text{m}$ ) and 186 g of ethyl alcohol were supplied and treated in a 500 ml ceramic sand mill for 8 hours. Then the glass beads were filtered out, ethyl alcohol was removed by evaporation under reduced pressure and the resultant product was dried to obtain 99 g of particulate mica having an average particle size of 2  $\mu\text{m}$ ."

Treating a mixture of mica and alcohol in a sand mill is not the same as dry grinding. In fact, this process is clearly wet grinding. It is explicitly disclosed that the glass beads are filtered and the alcohol is removed by evaporation. According to the wet grinding process, no mica with an irregular surface structure results. Therefore, Applicants respectfully submit that the EPA does not disclose such mica having an

irregular surface structure resulting from a dry grinding process nor a use of the same in a film.

This difference is more than one of production choice. Through experimentation, Applicants have found that it makes a difference whether dry grinding or wet grinding is applied to the mica. The wet grinding in ethyl alcohol according to Referential Example 1 corresponds exactly to Applicants' comparison as outlined in Comparative Example 1. According to the present invention, by dry grinding the shape of the mica is modified into a rough surface whereas by wet grinding in a solvent (like ethyl alcohol) as disclosed in the EPA the platelet structure is retained.

One of the primary objects of the instant invention was to provide a laser markable oriented film having good transparency. The problem was to achieve excellent transparency, with no spots or other optical defects, despite a modification which makes the film laser markable.

Accordingly, Applicants respectfully submit that the present invention is distinguishable from the EPA in that mica is used in the present invention as claimed which has been subjected to dry grinding in order to achieve a rough surface structure of the mica. Surprisingly the film is laser markable with amounts as low as defined in claim 1 while still remaining optically brilliantly clear and a white mark instead of brown as would ordinarily result from laser irradiation. The examples and comparative examples of the instant invention demonstrate that the rough surface structure of the mica is a critical feature, since with wet ground mica the optical appearance of the film

is impaired by spots. Also the resulting film is less transparent and the transparency seems to be impaired by the presence of microvoids caused by the wet ground mica.

Therefore the question is whether it was obvious for a skilled artisan starting with the EPA to modify the wet ground mica to a dry ground mica in order to improve the optical appearance of a laser markable transparent oriented polypropylene film. The answer is clearly "no." There is no indication in any of the references of there being a relation between the surface structure of the mica and the transparency of the film. If anything was to be expected it would have been that a rough particle in an oriented film causes less transparency because smoothness would ordinarily be associated with gloss and transparency by a film manufacturer.

The EPA does not disclose any specifics about the structure of the mica. According to the specification of the EPA, mica is one of many laser pigments which can possibly be used in the context of that invention. Also, the EPA does not refer to film applications specifically. The examples referring to mica in polypropylene are 5, 6 and 7, but these demonstrate wet ground mica, standing in clear contradiction to the disclosure and claim language of the present invention.

Accordingly, Applicants respectfully submit that the skilled artisan working according to the teachings of the EPA in combination with personal experience would realize that the films resulting from the teaching of the EPA have very poor transparency. With this as a background, the artisan would desire to improve the transparency. How would the artisan reach the conclusion that choosing another mica of a different surface structure would result in less haze? Clearly the EPA does not give

any hint towards this solution, and the artisan's personal skill would not provide the answer either. There is not even an indication that the structure of the laser pigment is a critical feature, let alone there being any indication that the structure is critical for the transparency of an oriented film containing this laser pigment. To the contrary, the EPA even suggests the addition of  $\text{TiO}_2$ , which changes the transparent film into a white film, to modify the black marking into a grey color.

Therefore the EPA cannot be said to render obvious the invention as instantly claimed.

### **3. Conclusions as to Meyer *et al.* and the EPA**

Meyer *et al.* clearly does not fill the gap left by the teachings of the EPA. Particularly, the Meyer *et al.* teach higher amounts of filler and say nothing about laser marking. Furthermore, the patent to Meyer *et al.* is not related to transparent oriented films. It can only be concluded then from the teachings of Meyer *et al.* that there can be no derivation of a motivation for using a dry ground mica in a polypropylene film.

### **4. Middlesworth *et al.* and Linzmeier *et al.***

The remaining references to Middlesworth *et al.* and Linzmeier *et al.* do nothing to overcome the deficiencies of the teachings of Meyer *et al.* and the EPA. In fact, these last two references are quite remote. Particularly, the patent to Linzmeier *et al.* refers neither to films nor polypropylene, let alone polypropylene films. Moreover, the teachings of Linzmeier *et al.* are directed to the application of a coating using tin dioxide



which is contrary to a laser pigment having no metal oxide coating. Finally, the patent to Middlesworth *et al.* is also remote since this reference is neither related to laser marking nor to polypropylene films, but instead is directed to an entirely different field.

Applicants respectfully request that the Examiner's rejections under 35 U.S.C. Section 103(a) be reconsidered and withdrawn.

#### **NEW CLAIMS 15 THROUGH 25**

New Claim 15 has been added to reintroduce the mean particle size of from 2 to 8  $\mu\text{m}$ , cancelled from amended Claim 7.

New Claim 16 has been added to reintroduce the layered silicate as being in the base layer, the interlayer and the top layer, cancelled from amended claim 8.

New Claim 17 has been added to reintroduce the layered silicate as being in the base layer and the interlayer, cancelled from amended claim 8.

New Claim 18 has been added to reintroduce the layered silicate as being in the base layer and the top layer, cancelled from amended claim 8.

New Claim 19 has been added to reintroduce the layered silicate as being in the interlayer and the top layer, cancelled from amended claim 8.

New Claim 20 has been added to reintroduce the particulars of the transverse orientation restricted in amended claim 14.

New claim 21 has been added to reintroduce the limitations cancelled from amended claim 9.

New claim 22 has been added to reintroduce other limitations cancelled from amended claim 9.

New claim 23 has been added to reintroduce the limitations cancelled from amended claim 10.

New claim 24 is a revised version of now-cancelled claim 11.

New claim 25 is a revised version of now-cancelled claim 12.


### **CONCLUSION**

In light of the above amendments and remarks, Applicants respectfully submit that all pending claims as currently presented are in condition for allowance. If, for any reason, the Examiner disagrees, please call the undersigned attorney at 248-433-7552 in an effort to resolve any matter still outstanding *before* issuing another action. The undersigned attorney is confident that any issue which might remain can readily be worked out by telephone.

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Applicants respectfully request that a timely Notice of Allowance be issued in this case.

Respectfully submitted,



Thomas T. Moga  
Registration No. 34,881  
Attorney for Applicants

DICKINSON WRIGHT PLLC  
1901 L Street, N.W., Suite 800  
Washington, D.C. 20036  
202-457-0160

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